WORK PROCESS SCHEDULE

OCCUPATION: **LABORATORY TESTER**

DOT CODE: **029.261-010**

AIMS CODE: **0269**

DESCRIPTION:
Performs laboratory tests according to prescribed standards to determine chemical and physical characteristics or composition of solid, liquid, or gaseous materials for such purposes as quality control, process control, or product development: Sets up, adjusts and operates laboratory equipment and instruments, such as microscopes, centrifuge, agitators, viscosimeter, chemical balance scales, spectrophotometer, gas chromatograph, colorimeter, and other equipment. Tests materials used as ingredients in adhesives, cement, propellants, lubricants, refractories, synthetic rubber, plastics, paint, paper, cloth, and other products for such qualities as purity, stability, viscosity, density, absorption, burning rate, and melting or flash point. Tests solutions used in processes, such as anodizing, waterproofing, cleaning, bleaching, and pickling for chemical concentration, specific gravity, or other characteristics. Tests materials for presence and content of elements or substances, such as hydrocarbons, manganese, natural grease, tungsten, sulfur, cyanide, ash, dust, or impurities. Tests samples of manufactured products to verify conformity to specifications. Records test results on standardized forms and writes test reports describing procedures used. Cleans and sterilizes laboratory equipment. May prepare graphs and charts. May prepare chemical solutions according to standard formulas. May add chemicals or raw materials to process solutions or product batches to correct or establish formulation required to meet specifications. May calibrate laboratory instruments.

ON-THE-JOB TRAINING: 4000 HOURS

The following schedule of work experience is intended as a guide. It need not be followed in any particular sequence, and it is understood that some slight adjustments may be necessary in the hours allotted for different work experience to become fully competent in all work processes which are a part of the occupation.

This classification will be used for those personnel who are required to do the following:

Perform tests to determine chemical or physical properties, characteristics, or condition of materials using tensile, charpy

impact, fatigue, photographic, metallographic, spectographic equipment, and/or chemicals and chemical analysis equipment, and/or other laboratory testing or analytical equipment; maintain and calibrate laboratory equipment required for above tests; obtain and prepare samples and specimens for tests and reagents used in tests; observe and record test data. Work will be performed under general direction of engineer, scientist, or supervisor.

METALLURGICAL

Apprentices will be trained in the following:

1. Hardness testing
2. Mechanical testing
3. Heat treating
4. Plating and surface cooling
5. Sample preparation
6. Salt spray and humidity testing
7. Metallography(basic)
8. Macro Etching
9. Camera work including developing, printing and enlarging
10. Welding technique
11. Corrosion testing
12. Literature survey
13. X-ray and specto-graphic analysis

CHEMICAL

Apprentices will be trained in the following:

1. Use and care of the Analytical Balance
   a. Chainomatic
   b. Mettler and Sartorius - direct weighing balances
   c. Micro Balance
   d. Trip Balance
2. Use and care of the Chemical Microscope
3. Instructions in the Handling and Use of Chemicals
4. Handling and Analysis of Radio-Active Water
5. Elementary Glass Working
   a. Making simple bends in glass tubing
   b. Fine polishing glass and annealing
   c. Cutting glass
6. Techniques of Filtration
   a. Types and grades of filter paper
   b. Vacuum filtration

c. Gravity filtration
7. Identification of Metals and Alloys - Spot Testing
8. Metal Analysis - Practical Laboratory Work
   a. Ferrous
   b. Nonferrous
9. Water Analysis - Practical Laboratory Work
   a. Primary water
   b. Secondary water - Analysis and Treatment
   c. Chlorination
10. Gas Analysis - Practical Applications
11. Use of Specifications

Operation, care and maintenance of the following chemical Equipment used in Analysis of Metals, Gases, and Water:

1. Flame photometers
2. P H Meters
3. Conductivity Meters
4. Gas Analyzers
5. Oxygen Testers
6. Mine Safety and Davis Explosimeter
7. Leco Induction Furnace - for determing carbon and sulfur in metals and alloys
8. Muffle Furnaces and Pyrometers
9. Vacuum Gas Analyzer and Blacet Leighton Equipment
10. Fisher Photometer for Colorimetric Analysis
11. Saybolt Viscosimeter for Oil
12. Selenium Rectifier for Electroplating
13. Mecury Cathode- Dynacath
14. Controlled Potential Electro-Analyzer
15. Barnstead Distilling Apparatus
16. Ion Exchangers

LABORATORY INSTRUCTION

1. Principles of Inorganic chemistry
2. Principles of Elementary Qualitative Analysis
3. Principles of Elementary quantitative Analysis
   a. Gravimetric Methods
   b. Volumetric Methods
   c. Gas Analysis
4. Principles of Electrochemistry
5. Calculations in Chemical Analysis